

## QUERY CONTROL FORM

Application No. 09/878,781

Prepared by

Examiner-GAU Devi, D-1643

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## JACKET

- |                      |                        |                    |                    |
|----------------------|------------------------|--------------------|--------------------|
| a. Serial No.        | f. Foreign Priority    | k. Print Claim(s)  | <u>p. PTO-1449</u> |
| b. Applicant(s)      | g. Disclaimer          | l. Print Fig.      | q. PTOL-85b        |
| c. Continuing Data   | h. Microfiche Appendix | m. Searched Column | r. Abstract        |
| d. PCT               | i. Title               | n. PTO-270/328     | s. Sheets/Figs     |
| e. Domestic Priority | j. Claims Allowed      | o. PTO-892         | t. Other           |

## SPECIFICATION

- Page Missing
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- Brief Description
- Sequence Listing
- Appendix
- Amendments
- Other

## CLAIMS

- a. Claim(s) Missing
- b. Improper Dependency
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- f. Punctuation
- g. Amendments
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- k. Other

## MESSAGE

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② Please supply missing ATCC No. on page 15, lines 15<sup>th</sup>-17. - see attached

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## RESPONSE

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FORM PTO-1449 (Modified)  
LIST OF PATENTS AND PUBLICATIONS  
FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT  
(Use several sheets if necessary)  
Sheet 1 of 1

In the Application of BOLTON et al.

Serial No.: 09/878,781

Art Unit: Unassigned

Filed: June 11, 2001

Examiner: Unassigned

Title: IMMUNIZATION OF DAIRY CATTLE WITH GapC PROTEIN AGAINST STREPTOCOCCUS INFECTION

U.S. PATENT DOCUMENTS

Exam. Init.	Ref. Desig.	Document No.	Date	Name	Class	Sub Class	Filing Date
	AA-2						

FOREIGN PATENT DOCUMENTS

Exam. Init.	Ref. Desig.	Document No.	Publication Date	Country or Patent Office	Class	Sub Class	Translation YES	NO
	AB-2	WO 96/41879	December 27, 1996	PCT				
	AC-2	WO 98/18930	May 7, 1998	PCT				
	AD-2	WO 99/42588	August 26, 1999	PCT				

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)

Exam. Init.	Ref. Desig.	Description
	AE-2	Finch et al., "Further Studies on the Efficacy of a Live Vaccine Against Mastitis Caused by <i>Streptococcus Uberis</i> ," <i>Vaccine</i> <u>15</u> (10):1138-1143 (1997)
	AF-2	Gase et al., "Cloning Sequencing and Functional Overexpression of the <i>Streptococcus Equisimilis</i> H46A gapC Gene Encoding a Glyceraldehyde-3-Phosphate Dehydrogenase that also Functions as a Plasmin(ogen)-Binding Protein. Purification and Biochemical Characterization of the Protein," <i>European Journal of Biochemistry</i> <u>239</u> (1):42-51 (1996)

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Date Considered:

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Sheet 1 of 3

In the Application of BOLTON et al.

Serial No.: 09/878,781

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Examiner: Unassigned

Title: IMMUNIZATION OF DAIRY CATTLE WITH GapC PROTEIN AGAINST STREPTOCOCCUS INFECTION

## U.S. PATENT DOCUMENTS

Exam. Init.	Ref. Desig.	Document No.	Date	Name	Class	Sub Class	Filing Date
	AA-2	4,954,618	Fahnestock				
	AB-2	4,977,082	Boyle et al.				
	AC-2	5,108,894	Bjorck et al.				
	AD-2	5,237,050	Boyle et al.				
	AE-2	5,328,996	Boyle et al.				
	AF-2	5,721,339	Boyle et al.				
	AG-2	5,863,543	Jiang et al.				

## FOREIGN PATENT DOCUMENTS

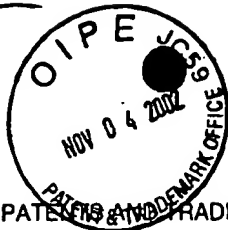
Exam. Init.	Ref. Desig.	Document No.	Publication Date	Country or Patent Office	Class	Sub Class	Translation YES	Translation NO
	AH-2	EP 0 887 410	30 December 1998	EPO				
	AI-2	WO 00/39299	6 July 2000	PCT				
	AJ-2	WO 96/40928	19 December 1996	PCT				
	AK-2	WO 98/18930	7 May 1998	PCT				

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Serial No.: 09/878,781

Art Unit: 1636

Filed: June 11, 2001

Examiner: Unassigned

Title: IMMUNIZATION OF DAIRY CATTLE WITH GapC PROTEIN AGAINST STREPTOCOCCUS INFECTION

Exam. Init.	Ref. Desig.	Description
	AL-2	Baird et al., "Epitopes of Group A Streptococcal M Protein Shared With Antigens of Articular Cartilage and Synovium," <i>The Journal of Immunology</i> <u>146</u> (9):3132-3137 (1991)
	AM-2	Bisno, Alan. L., "Group A Streptococcal Infections and Acute Rheumatic Fever," <i>New Eng J. Med.</i> <u>325</u> :783-793 (1991)
	AN-2	Bronze et al., "Epitopes of Streptococcal M Proteins that Evoke Antibodies That Cross-React with Human Brain," <i>The Journal of Immunology</i> <u>151</u> (5):2820-2828 (1993)
	AO-2	Cunningham et al., "Study of Heart-Reactive Antibody in Antisera and Hybridoma Culture Fluids Against Group A Streptococci," <i>Infection and Immunity</i> <u>42</u> (2):531-538 (1983)
	AP-2	Dale, J. L., "Multivalent Group A Streptococcal Vaccine Designed to Optimize the Immunogenicity of Six Tandem M Protein Fragments," <i>Vaccine</i> <u>17</u> (2):193-200 (1999)
	AQ-2	Dale, J. L. and Beachy, G. H., "Multiple, Heart-Cross Reactive Epitopes of Streptococcal M Proteins," <i>J. Exp. Med.</i> <u>161</u> :113-122 (1995)
	AR-2	Dale, J. L. and Beachy, G. H., "Protective Antigenic Determinant of Streptococcal M Protein Shared With Sarcolemmal Membrane Protein of Human Heart," <i>J. Exp. Med.</i> <u>156</u> :1165-1176 (1985)
	AS-2	Froude et al., "Cross-Reactivity Between Streptococcus and Human Tissue: A Model of Molecular Mimicry and Autoimmunity," <i>Microbiology and Immunology</i> <u>145</u> :5-26 (1989)
	AT-2	Kehoe, Michael A., "Group A Streptococcal Antigens and Vaccine Potential," <i>Vaccine</i> <u>9</u> :797-806 (1991)
	AU-2	Lancefield, Rebecca C., "Current Knowledge of Type-Specific M Antigens of Group A Streptococci," <i>J. of Immunology</i> <u>89</u> :307-313 (1962)
	AV-2	Langone, John J., "Protein A of <i>Staphylococcus aureus</i> and Related Immunoglobulin Receptors Produced by Streptococci and Pneumococci," <i>Advances in Immunology</i> <u>32</u> :167 (1982)
	AW-2	Liljeqvist et al., "Surface Display of Functional Fibronectin-Binding Domains on <i>Staphylococcus carnosus</i> ," <i>FEBS Letters</i> <u>446</u> :299-304 (1999)

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Examiner: Unassigned

Title: IMMUNIZATION OF DAIRY CATTLE WITH GapC PROTEIN AGAINST STREPTOCOCCUS INFECTION

Exam. Init.	Ref. Desig.	Description
	AX-2	Stollerman, G. H., "Rheumatogenic Streptococci and Autoimmunity," <i>Clin. Immunol. Immunopathology</i> , <u>61</u> :131-142 (1991)

Examiner:

Date Considered:

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a nucleotide sequence, respectively, which is derived from a GapC gene found in a variety of *Streptococcus* species, including, without limitation certain strains of group A streptococci (Lottenbery, R., et al., (1987) *Infect. Immun.* 55:1914-1918). The nucleotide sequence of representative *Streptococcus gapC* genes, and the corresponding amino acid sequence of the GapC proteins encoded by these genes, are depicted in the Figures. In particular, Figures 1 through 5 depict the isolated nucleotide sequences and isolated amino acid sequences of *S. dysgalactiae* (SEQ ID NO:3 and SEQ ID NO:4, respectively), *S. agalactiae* (SEQ ID NO:5 and SEQ ID NO:6, respectively), *S. uberis* (SEQ ID NO:7 and SEQ ID NO:8, respectively), *S. parauberis* (SEQ ID NO:9 and SEQ ID NO:10, respectively), and *S. iniae* (SEQ ID NO:11 and SEQ ID NO:12, respectively). However, a GapC protein as defined herein is not limited to the depicted sequences as subtypes of each of these *Streptococcus* species are known and variations in GapC proteins will occur between them.

Representative *gapC* genes, derived from *S. dysgalactiae*, *S. agalactiae*, *S. uberis*, and *S. parauberis*, are found in the plasmids pET15bgapC (ATCC No:), pMF521c (ATCC No:), pMF521a (ATCC No:), pMF521d (ATCC No:), and pMF521e (ATCC No:), respectively.

Furthermore, the derived protein or nucleotide sequences need not be physically derived from the gene described above, but may be generated in any manner, including for example, chemical synthesis, isolation (e.g., from *S. dysgalactiae*) or by recombinant production, based on the information provided herein. Additionally, the term intends proteins having amino acid sequences substantially homologous (as defined below) to contiguous amino acid sequences encoded by the genes, which display immunological and/or plasmin-binding activity.

Thus, the terms intend full-length, as well as immunogenic, truncated and partial sequences, and active analogs and precursor forms of the proteins. Also included in the term are nucleotide fragments of the gene that include at least about 8 contiguous base pairs, more preferably at least about 10-20 contiguous base pairs, and most preferably at least about 25 to 50, or more, contiguous base pairs of the gene, or any integers between